

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number  
**WO 2004/113501 A3**

(51) International Patent Classification<sup>7</sup>: **C07H 21/04**,  
C12N 15/85, 15/86, C07K 14/00, A01K 67/00

(21) International Application Number:  
PCT/US2004/019186

(22) International Filing Date: 16 June 2004 (16.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/478,878 16 June 2003 (16.06.2003) US  
60/483,199 27 June 2003 (27.06.2003) US  
60/550,257 5 March 2004 (05.03.2004) US  
60/570,374 12 May 2004 (12.05.2004) US

(71) Applicant (for all designated States except US): **THE  
GENERAL HOSPITAL CORPORATION** [US/US]; 55  
Fruit Street, Boston, MA 02114 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **RUVKUN, Gary**  
[US/US]; 120 Herrick Road, Newton, MA 02459 (US).  
**MAK, Ho, Yi** [CN/US]; 21 Beacon Street, Apt. 9D,  
Boston, MA 02108 (US).

(74) Agent: **ELBING, Karen, L., Ph., D.**; Clark & Elbing  
LLP., 101 Federal Street, Boston, MA 02110 (US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,  
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

(88) Date of publication of the international search report:  
21 April 2005

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: METHODS AND COMPOSITIONS RELATING TO LIPID ACCUMULATION

(57) Abstract: In general, this invention relates to nucleic acid and amino acid sequences involved in lipid accumulation, screening methods for identifying genes that regulate lipid accumulation, and the use of these sequences as targets for the diagnosis, treatment, and prevention of obesity and obesity-related diseases.

**BEST AVAILABLE COPY**

WO 2004/113501 A3

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/19186

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : CO7H 21/04; C12N15/85,86; C07K14/00+; A01K 67/00  
US CL : 536/24.5; 435/325; 530/350+; 800/8

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 536/24.5; 435/325; 530/350+; 800/8

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
PubMed, WormBase, STN

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	McKay et al. C. elegans: A model for Exploring the Genetics of Fat Storage, Developmental Cell, 2003, Vol. 4, pages 131-142, whole article	1-34
Y	Clayton, Clinical consequences of defects in peroxisoma b-oxidation, Biochemical Society Transactions, 2001, Vol. 29 pt. 2, pages 298-305, whole article	1-34
A	Santagata, et al. G-Protein Signaling Through Tubby Proteins, Science, 2001, Vol 292, pages 2041-2050.	



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

12 February 2005 (12.02.2005)

Date of mailing of the international search report

03 MAR 2005

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Joanne Hama, Ph.D.

Telephone No. (571) 272-2911

Form PCT/ISA/210 (second sheet) (January 2004)

BEST AVAILABLE COPY

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/19186

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 20 and 24  
because they relate to subject matter not required to be searched by this Authority, namely:  
Claims 20 and 24 encompass transgenic humans which is non-statutory.
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such  
an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all  
searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite  
payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report  
covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is  
restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐  
☐

The additional search fees were accompanied by the applicant's protest.

No protest accompanied the payment of additional search fees.